UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/477,392	01/04/00	HEINTZ	N V0139/7038-(

HM12/0410

HELEN C LOCKHART
WOLF GREENFIELD & SACKS P C
600 ATLANTIC AVENUE
BOSTON MA 02210

EXAMINER	
ZEMAN, R	
ART UNIT	**PAPER NUMBER**
1645	9

DATE MAILED: 04/10/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/477,392	Heintz et al.
Examiner	**Group Art Unit**
Robert A. Zeman	1645

☒ Responsive to communication(s) filed on *Jan 4, 2000* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *1* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-23 and 29* is/are pending in the application.

Of the above, claim(s) *17-23 and 29* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-16* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims *1-23 and 29* are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Election/Restriction

Applicant's election without traverse of Group I in Paper No 7. is acknowledged. Claims 17-23 and 29 have been withdrawn from consideration. Claims 1-16 are pending and currently under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Applicant is directed to the Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, paragraph 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification discloses SEQ ID NO: 1, SEQ ID NO:3, SEQ ID NO:5 and SEQ ID NO:50 which corresponds to the cDNA/genomic DNA encoding the protein human RIP60 and nucleic acids encoding polypeptides with sequences corresponding to SEQ ID NO: 2, SEQ ID NO:4, SEQ ID NO:6 and SEQ ID NO:51. Said sequences meet the written description provision of 35 USC 112, first paragraph. However, said claims are directed to encompass all nucleic acid molecules which code for polypeptides that have RIP60 activity (including all mutants derived by deletions, additions and/or substitution): sequences that hybridize to SEQ ID NO: 1, SEQ ID NO:3, SEQ ID NO:5 and SEQ ID NO:50 and nucleic acids encoding polypeptides with sequences corresponding to SEQ ID NO: 2, SEQ ID NO:4, SEQ ID NO:6 and SEQ ID NO:51, corresponding sequences from other species, mutated sequences, allelic variants, splice variants, sequences that have a recited degree of identity (similarity, homology), and so forth. None of these sequences meet the written description provision of 35 USC 112, first paragraph. The specification provides insufficient written description to support the genus encompassed by the claim.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.)

With the exception of SEQ ID NO: 1, SEQ ID NO:3, SEQ ID NO:5 and SEQ ID NO:50 and nucleic acids encoding polypeptides with sequences corresponding to SEQ ID NO: 2, SEQ ID NO:4, SEQ ID NO:6 and SEQ ID NO:51, the skilled artisan cannot envision the detailed chemical structure of the encompassed polynucleotides and/or proteins, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. The nucleic acid itself is required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404, 1405 held that:

> ...To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.* , 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gosteli* , 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood* , 107 F.3d at 1572, 41 USPQ2d at 1966.

> An adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. *Fiers v. Revel* , 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." Id. at 1170, 25 USPQ2d at 1606.
>
> The name cDNA is not itself a written description of that DNA; it conveys no distinguishing information concerning its identity. While the example provides a process for obtaining human insulin-encoding cDNA, there is no further information in the patent pertaining to that cDNA's relevant structural or physical characteristics; in other words, it thus does not describe human insulin cDNA. Describing a method of preparing a cDNA or even describing the protein that the cDNA encodes, as the example does, does not necessarily describe the cDNA itself. No sequence information indicating which nucleotides constitute human cDNA appears in the patent, as appears for rat cDNA in Example 5 of the patent. Accordingly, the specification does not provide a written description of the invention of claim 5.

Therefore, only SEQ ID NO: 1, SEQ ID NO:3, SEQ ID NO:5 and SEQ ID NO:50 and nucleic acids encoding polypeptides with sequences corresponding to SEQ ID NO: 2, SEQ ID NO:4, SEQ ID NO:6 and SEQ ID NO:51 but not the full breadth of the claim (or none of the sequences encompassed by the claim) meets the written description provision of 35 USC 112, first paragraph. The species specifically disclosed are not representative of the genus because the genus is highly variant. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (See page 1115.)

Claims 1-5, 11 and 14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The instant claims are drawn to an isolated polynucleotides wherein said polynucleotides encode polynucleotides with "RIP60 activity". Said polynucleotides include fragments and any polynucleotide resulting from the elongation, truncation or nucleotide insertion (or combinations thereof) of said polynucleotide. The resulting polynucleotides may or may not possess any of the biological properties of the RIP60 polypeptide. The specification does not identify, describe or provide guidance as to which of the myriad of polypeptide variants of the polypeptide meet the limitations of the instant invention. It is well known in the art that polypeptides with variations in their sequences do not predictably display the functions of their purported homolog. The specification fails to teach the critical protein portions that are needed to ensure the polypeptide would possess RIP60 biological activity. The specification is equally silent on what effects, if any, elongations, truncations and/or insertions would have on said activity since the tertiary structure of a given polypeptide could be radically altered by said modifications of the polynucleotide sequence. Protein chemistry is one of the most unpredictable areas of biotechnology. The art demonstrates that the significance of any particular amino acid or amino acid sequence with regard to a given aspect of biological activity cannot be predicted *a priori* and must be determined empirically on a case by case basis. The art teaches that even the alteration of a single amino acid in a protein can lead to unpredictable changes in the biological activity of the protein. Consequently, since the specification is silent on the effects a given modification to the disclosed polynucleotide would have on the structure and/or "biological activity" possessed by the resulting polypeptide and given the disclosure of Rudinger et al that the correlation of biological activity and a given amino acid modification is highly unpredictable, the specification has not provided sufficient guidance to allow one of skill in the art to practice the claimed

invention without undue experimentation. In view of the lack of an enabling description to obtain, make and use the amino acid variants and fragments of the instant claims, the unpredictability associated with making and using the claimed variants and fragments of the recited sequence encompassed in the scope of the claims as set forth above, one skilled in the art would not recognize from the disclosure that the Applicant was in possession of any of the polynucleotides encoding the variants or polypeptide fragments.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rendered vague and indefinite by the use of the term "RIP60 activity". It is unclear which RIP60 activity Applicant is referring to. Is Applicant referring to the DNA binding activity? DNA condensation activity? Cell internalization activity? or some other biological activity of the native RIP60 protein. As written it is impossible to determine the metes and bounds of the claimed invention.

Claim 1 is rendered vague and indefinite by the use of the term "under stringent conditions". Said term is ambiguous and must be clarified.

Claim 1 is rendered vague and indefinite by the use of the phrase "deletions, additions and substitutions of (a) which code for a polypeptide having RIP60 activity. Said phrase is confusing.

As written it seems that it is the polypeptides encoding the deletions, additions and substitutions of (a) have the RIP60 activity instead of the mutated polypeptide. As written it is impossible to determine the metes and bounds of the claimed invention.

Claim 1 is rendered vague and indefinite by the use of inconsistent language. The preamble of said claim refers to a single nucleic acid **molecule**. Subsections (a) and (c) refer to a plurality of nucleic acid **molecules**.

Claims 6 and 7 are nonsensical. It is impossible to determine the metes and bounds of said claims. Additionally, claim 6 refers to sequences listed in a table within the specification. All such sequences must be recited within the claims. Claim 6 also recites a limitation based on "nucleotides which are not identical to.....". This is improper. All limitations must be phrased to recite what properties etc the claimed invention encompasses as opposed to those it does not encompass.

Claim 7 recites improper Markush language. The final member of the group must be preceded by the conjunction **"and"**.

Claims 6 and 9-10 are rendered vague and indefinite by the use of the term "unique fragment". What biochemical/physical properties must a fragment have to be considered "unique"? What comprises a fragment? As written it is impossible to determine the metes and bounds of the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-3 and 6-9 are rejected under 35 U.S.C. 102(a) as being anticipated by Sulston et al. (Genome Research, Vol. 8 No. 11, 1998, pages 1097-1108).

Sulston et al. disclose the polynucleotide sequences recited SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5 and 50 (see STIC search report, attached). Consequently, said reference anticipates all the limitations of the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to

the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sulston et al. (Genome Research, Vol. 8 No. 11, 1998, pages 1097-1108).

Sulston et al. disclose the polynucleotide sequences recited in SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5 and 50 (see STIC search report, attached). Consequently, said reference anticipates all the limitations of the instant claims. Sulston et al. does not explicitly disclose incorporating said polynucleotides with a promoter in an expression vector, transfecting a host cell with said vector nor using said transformed cell to express the recombinant proteins recited in the instant claims. However, it would be obvious to one of skill in the art to take a polynucleotide sequence, determine the open reading frames and incorporate it in a vector so the polypeptide encoded by said polynucleotide can be expressed cheaply and efficiently in a recombinant system.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Zeman whose telephone number is (703) 308-7991. The examiner can be reached between the hours of 7:30 am and 4:00 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, Donna Wortman, Primary Examiner can be reached at (703) 308-1032 or the examiner's supervisor, Lynette Smith, can be reached at (703)308-3909.

DONNA WORTMAN
PRIMARY EXAMINER

Robert A. Zeman

April 6, 2001